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Mazdoor Kisan Shakti Sangathan

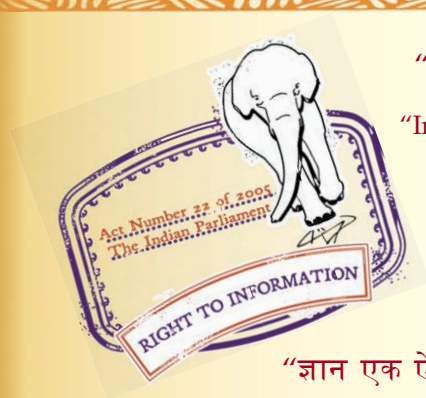
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“Step Out From the Old to the New”

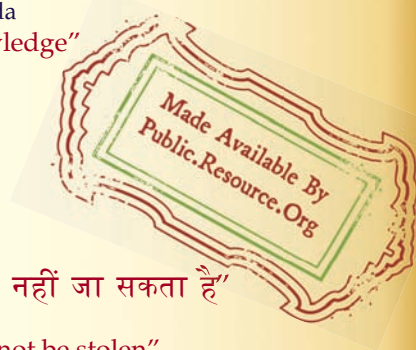
IS 3020 (1976): Leather for oil seals [CHD 17: Leather, Tanning Materials and Allied Products]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”

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IS : 3020 - 1976

Indian Standard
SPECIFICATION FOR
LEATHER FOR OIL SEALS
(First Revision)

First Reprint MAY 1989

UDC 675.06 : 621 - 762.8

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 11002

AMENDMENT NO. 1 JANUARY 1987

TO

**IS : 3020-1976 SPECIFICATION FOR LEATHER
FOR OIL SEALS**

(First Revision)

[Page 6, Table 2, col 2, Sl No. (i), line 3] –
Substitute 'Max' for 'Min'.

(CDC 16)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR LEATHER FOR OIL SEALS

(First Revision)

Leather Sectional Committee, CDC 16

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Indian Standard
SPECIFICATION FOR
LEATHER FOR OIL SEALS
(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 19 July 1976, after the draft finalized by the Leather Sectional Committee had been approved by the Chemical Division Council.

0.2 Oil seal is used in machinery for sealing of shafts, axles, rods or similar moving parts against leakage of fluids and ingress of dust, dirt, steam, gas, etc. This material plays an important role in hydraulic machinery.

0.3 Leather as a packing material is unique. Leather, being a three-dimensionally woven fibre, is preferable as a basic material for the manufacture of oil seals compared to other natural and synthetic materials. Generally, two types of leather indicated below are used for the manufacture of oil seals:

- a) Chrome tanned leather is used for oil seals which are required to withstand temperature up to 105°C in the presence of moisture and is also suitable for high pressure systems.
- b) Chrome retanned leather combines the high abrasion resistance of vegetable tanned leather and the compactness of chrome tanned leather. This type of leather is particularly suitable in moisture-free high temperature conditions.

0.4 This standard was originally published in 1964 and covered the basic requirements for vegetable tanned, chrome tanned and chrome retanned leathers used as raw materials for the manufacture of oil seals and washers. It has now been decided to formulate a separate standard for leather for washers. Accordingly, the requirements for vegetable tanned leather have been deleted from Table 1. In this revision, the requirements for the characteristic of soluble ash, resistance to hot air, cold air and artificial sea water and shrinkage in gasoline have been dropped. Further, a new clause for sampling has been introduced.

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0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and methods of sampling and test for leather for oil seals.

1.1.1 It includes leather suitable for the manufacture of oil seals required for slow moving, fast running or high speed shafts operating at room temperature or between 60 and 100°C.

2. TERMINOLOGY

2.1 For the purpose of this standard, the following definition and the definitions given in IS : 1640-1960† shall apply.

2.2 Oil Seals — Material generally used as seals and mounted on the ends of shafts or sleeves to retain oil in the bearing. 'Oil seals are used to seal air, fresh water, sea water, chemicals, oils and greases, etc.

3. TYPES

3.1 There shall be two types of leathers for oil seals.

3.1.1 *Type 1* — Full chrome tanned leather (FCTS).

3.1.2 *Type 2* — Combination tanned leather (CS).

4. REQUIREMENTS

4.1 Raw Materials — The material shall be of wet salted or green slaughtered buffalo or cow hides of good substance and free from any visible defects and flaycuts, holes, etc.

4.2 Tanning — Material shall be tanned by

- a) chrome tanning, or
- b) special type combination tanning.

*Rules for rounding off numerical values (*revised*).

†Glossary of terms relating to hides, skins and leather.

4.3 Finishing — After tanning, the material shall be shaved on flesh side to the required thickness. The material shall be scoured thoroughly on the grain and shall be suitably dressed with oil and fats to make it suitable for being moulded into the required shape and design. The material may also be impregnated with a suitable resin or polymer.

4.4 Chemical Requirements — The material shall comply with the requirements given in Table 1 when tested in accordance with the prescribed methods.

TABLE 1 CHEMICAL REQUIREMENTS FOR LEATHER FOR OIL SEALS

SL No.	CHARACTERISTIC	REQUIREMENT		METHOD OF TEST IN IS : 582-1970*
		Type 1	Type 2	
(1)	(2)	(3)	(4)	(5)
i)	Total ash, percent by mass, <i>Max</i>	9.0	9.0	LC : 3
ii)	Solvent extractable substances, percent by mass	3.5 to 7.0	3.5 to 7.0	LC : 4
iii)	Chromium content (as Cr_2O_3), percent by mass, <i>Min</i>	3.5	3.0	LC : 10
iv)	Water soluble matter, percent by mass, <i>Max</i>	—	7	LC : 6
v)	Insoluble ash, percent by mass, <i>Max</i>	8.0	7.0	LC : 8
vi)	pH of water solubles, <i>Min</i>	4.0	4.0	LC : 18
vii)	Degree of tannage, <i>Max</i>	—	55	LC : 21

NOTE — Calculation of requirements for characteristics (i) to (v) are on zero percent moisture basis. The moisture content shall be determined as prescribed in LC : 1 of IS:582-1970*.

*Methods of chemical testing of leather (*first revision*).

4.5 Physical Requirements — The material shall comply with the requirements given in Table 2, when tested in accordance with the prescribed methods.

TABLE 2 PHYSICAL REQUIREMENTS FOR LEATHER FOR OIL SEALS

SL No.	CHARACTERISTIC	REQUIREMENT (Clause 4.5)		METHOD OF TEST, REF TO
		Type 1	Type 2	
(1)	(2)	(3)	(4)	(5)
i)	Shrinkage in boiling water, percent area, <i>Min</i>	3.0	3.0	} LP : 25 of IS : 5914-1970*
	Resistance to hot oil	Shall not shrink more than 5 percent and shall remain soft and flexible at 100°C	Same as Type 1 for	
iii)	Resistance to hot air	Shall remain soft and flexible at 100°C	Shall remain soft and flexible at 100°C	Appendix A
iv)	Cracking of the grain	Shall not crack	Shall not crack	LP: 13 of IS : 5914-1970*

*Methods of physical testing of leather.

5. PACKING AND MARKING

5.1 Packing— The material shall be packed as agreed to between the purchaser and the supplier.

5.2 Marking— The packages shall be marked with the following:

- Name and type of the material;
- Name of the manufacturer and/or trade-mark, if any;
- Quantity (number of pieces of the material);
- Month and year of manufacture; and
- Batch number.

5.2.1 The packages may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. SAMPLING

6.1 Representative samples of the material to be drawn and criteria for finding out the conformity of the material to the requirements of this specification shall be as prescribed in IS : 5868-1969*.

APPENDIX A

[Table 2, Sl No. (iii)]

DETERMINATION OF RESISTANCE TO HOT AIR

A-1 PROCEDURE

A-1.1 Heat the test specimen of 100×20 mm in size at $100 \pm 2^\circ\text{C}$ for 100 hours in a current of hot air. Cool it to room temperature and compare with the original as regards flexibility and softness.

*Method of sampling for leather.

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